FY2013 LDRD Projects

Division	P.I.	Title	Total allocation ($K)
AF	Emma,Paul	* Free Electron Laser Soft X-ray Self-Seeding	469
AF	Schenkel,Thomas	Probing Point Defect Dynamics in Solids with Short Ion Beam Pulses	296
AF	van Tilborg, Jeroen	Experimental Realization of a High-Harmonics-Seeded, Laser-Plasma-Accelerator Driven Free-Electron Laser	315
AL	Arenholz,Elke	Magnetic-Field-Induced and Transient Quantum Phases in Correlated Materials	252
AL	Chuang,Yi-De	* Studying the Emergence of Electronic Correlations with Time- and Momentum-resolved RIXS	193
AL	Guo,Jinghua	Soft X-Ray Spectroscopy for In-situ Electronic Structure Study of Artificial Photosynthesis.	130
AL	MacDowell, Alastair A	New Opportunities in Hard X-ray Tomography- High Temperature and Elemental Imaging	174
AL	Voronov,Dmytro L	Next Generation Grating for Spectroscopy and Pulse Compression	304
AL	Wang,Cheng	Grazing Incident Soft X-ray Scattering of Organic Photovoltaics	126
CH	Abergel,Rebecca J	Global Transcriptome, Deletome and Proteome Profiling of Yeast Exposed to Radioactive Metal Ions: a Tool to Distinguish Radiation-Induced Damage From Chemical-Toxicity.	211
CH	Belkacem,Ali	* Scientific Tools in Multi-Dimensional X-ray Spectroscopy and Coherent Diffractive Imaging	358
CH	Chandler,David	Asymetric Responses of Systems Far From Equilibrium	189
CH	Gessner,Oliver	* Ultrafast x-ray studies of interfacial charge transfer processes	379
CH	Gilles,Mary K	Photo-switchable Metal Organic Frameworks for CO2 Sequestration	157
CH	Hartwig,John	Elementary Organometallic Reactions in a Protein Matrix	209
CH	Head-Gordon, Martin	New Algorithms for Performing and Analyzing Large Scale Electronic Structure Calculations	281
CH	Head-Gordon,Teresa Lyn	Electrostatic nanoscale-mesoscale coupling to discover design rules for energy materials	217
CH	Shuh,David K	* Developing f-electron Soft X-ray Spectroscopy Simulation, Theory, and Experiment for Clean Energy Materials	366
CH	Toste,F. Dean	A Multi-Investigator Approach Towards Chemoenzymatic Catalysis	229
CH	Wilson,Kevin R	Oxidative Transformations of Organic Aerosol	176
CR	Haranczyk,Maciej	Optimization-based Strategy for Computational Design of Nanoporous Carbon-Zero Materials	167
CR	Li,Xiaoye Sherry	Next Generation Computing for X-Ray Science	279
CR	Nugent,Peter E	Nyx: The Lyman Alpha Forest Cosmology Simulator	209
CR	Oliker,Leonid	High-Performance Parallel Graph-Analysis for Key Genomics Computations	230
CR	Sethian,James A	* Interlinkage of Cross-Disciplinary Mathematical Technologies	515
CR	Trebotich,David Paul	Modeling Subsurface Reactive Transport Processes from Mineral Surface-to-Pore-to-Continuum	266
CR	Tull,Craig	* Towards an end-to-end solution for light source data	392
CR	Ushizima,Daniela Mayumi	Quantitative Image Analysis for Computational Modeling	151
CR	Yang,Chao	Computational approaches to understanding ultrafast science (Alvarez fellowship)	193
CR	Yang,Chao	Numerical Algorithms and Mathematical Software Tools for Computational Material Science and Chemistry	101
EE	Buluswar,Shashi	* LIGTT Integrated LDRD Proposal Part 4. Saving Lives with a Solar Suitcase	131
EE	Doeff,Marca M	Low Cost Aqueous Sodium Ion Cells for Grid Applications	189
EE	Greenblatt,Jeffery Buyers	* Guiding LBNL low-carbon technology development with life-cycle energy and impacts analyses	653
EE	Hadley,Odelle L	Measuring Vertical Profiles of Atmospheric Pollutants using High Altitude Meteorological Balloons	137
EE	Lanzisera,Steven M	Stick-on Electricity Meters: Low Installed Cost Building Sub-Meters for Commercial and Industrial Energy Efficiency	204
EE	Sohn,Michael D	Integrated Assessment Capability for Sustainable Water-Energy Co-Management	334
EE	Wang,Yungang	* LIGTT Integrated LDRD Proposal Part 1. The Design and Evaluation of an Inexpensive, Fuel-Efficient and Super Low-Emissions Biomass Cookstove	213
EE	Wetter,Michael	Urban Scale Energy Grid Modeling	337
EE	Zormpa,Vasileia	A Novel Nanoscale Chemical Analysis System for Low-Cost Solar Materials	201

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ES	Brodie,Eoin L	* Integrative mapping of soil heterogeneity at the microbial scale	669
ES	Chakraborty, Romy	High-throughput Isolation and Functional Screening (HIFS) of Microbes Relevant to Today's Carbon Cycling and Bioenergy Needs	115
ES	Christensen,John Neil	Isotopic Probe of Ion Migration Processes in Li-ion Batteries	150
ES	Davis,James A	Effect of Secondary Mineral Coatings on Biogeochemical Processes	269
ES	Jansson,Christer G	CyanoAlkanes: Engineering Cyanobacteria for Phototrophic Production of Advanced Biofuels	240
ES	Romps,David	Interactions among Cloud Processes, Convection, and Climate Change	296
ES	Tokunaga,Tetsu K	Testing a New Carbon Sequestration Strategy for Biofuel Crop Soils	178
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GN	Deutsch,Samuel	Development of biosensors for high-throughput functional screening of biosynthetic pathways	116
GN	Liolios,Konstantinos	Computational Data management and Analysis Methods for the Study of a Rapidly Expanding Genome and Metagenome Sequence Data Space	285
GN	Malmstrom,Rex R	Revolutionizing Genome Sequencing of Uncultured Microorganisms: Development of a High-throughput Pipeline for Targeted Single-cell Genome Amplification	118
GN	Pennacchio,Len	Function-Based Approaches for Distant-Acting Enhancer Discovery	254
GN	Wang,Zhong	Combining machine learning and high performance computing to discover novel enzymes	196
GN	Wei,Chia-Lin	Developing epigenomic technologies to interrogate genome functions relevant for environment and bioenergy	206
LS	Auer,Manfred	* Integrated Imaging of Microbial Community Response to External Threats	546
LS	LaBarge,Mark A	Effects of low dose radiation on communities of epithelial cells as a function of age.	254
LS	Minoda,Akiko	4D Dynamics of Epigenome Regulation in Response to Environmental Challenges	481
LS	Northen,Trent R	Modeling desert soil crust microbial community response to pulsed climate events.	398
LS	Sudar, Damir	* Development of Protein (Co-)Localization Atlases at Multiple Scales in Eukaryotes	570
LS	Tainer,John A	* Enabling Structural Systems Biology at NGLS	423
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MS	Bokor,Jeffrey	Ultrafast Spin and Magnetization Dynamics in Nanoscale Magnetic Structures	132
MS	Ercius,Peter	Electron Microscopy With Vortex Beams Carrying Orbital Angular Momentum	118
MS	Fischer,Felix Raoul	Template Assisted Assembly of Monodisperse Discotic Phases as Highly Tunable Electronic Materials	140
MS	Kaindl,Robert A	* Attosecond XUV Condensed-Matter Science: Electronic Wavefunction Coherence & Correlated Dynamics	162
MS	Schuck,Peter	Exploiting Nanowire Surface States for Solar-Spectrum-Matched Plasmon-Enhanced Water Splitting	241
MS	Weber-Bargioni, Alexande	Exciton Visualization and Engineering in Organic Materials for Energy Conversion	261
MS	Yaghi,Omar	Rational Design Approach to the Formation of Hybrid Framework Materials	441
NE	Canon,Richard	Defining an Ecosystem to Support Data -Intensive Science	150
NE	Skinner,David E	* Integrated Tools for Next Generation Bioimaging	345
NS	Haxton,Wick C	Lattice QCD Codes by Discretizing Time and Space: Year 3	311
NS	Kasen,Daniel	Simulating Astrophysical Explosions through High Performance Computing	226
NS	Loizides, Constantinos	Probing the Partonic Structure of Protons and Nuclei with Isolated Photons at the LHC	182
PB	Ajo-Franklin,Caroline	Probing Dynamics of Electron Transfer for Microbial-based Energy Interconversion	282
PB	Deutschbauer,Adam M	Functional Genomic Encyclopedia of Bacteria and Archaea: Evidence-Based Annotation of the Microbial Tree of Life	399
PB	Hillson,Nathan J	DNA DIVA (Design, Implementation, Verification Automation) pipeline	320
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PB	Loque,Dominique	* Optimizing plant-microbe interactions for sustainable supply of nitrogen for bioenergy crops	404
PB	Ralston,Corie	Synchrotron X-Ray Footprinting: A Step Beyond Standard Structural Techniques in Revealing Protein Interactions and Dynamics	146
PB	Sauter,Nicholas K	Computational Methods for Photosystem II Structure Probed by X-ray Free Electron Laser Studies	113
PB	Zwart,Petrus H	* Feasibility and Development of Fluctuation Xray Scattering at the NGLS	290
PH	Bebek, Christopher	Higher Performance CCDs for Next Generation Dark Energy Experiments	262
PH	Garcia-Sciveres, Maurice	New Monolithic CMOS Sensors on a Fully Isolated Substrate	289
PH	Perlmutter,Saul	Transforming Infrared Astronomy with Nanostructured IR Filters	288
PH	von der Lippe, Henrik	High voltage up and down converters for low power low density detector instrumentation	145